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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,306	01/27/2006	David H. Tracy	BCR-016.0P US	1902

22840 7590 09/17/2009
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EXAMINER	
SUAREZ, FELIX E	

ART UNIT	PAPER NUMBER
2857	

NOTIFICATION DATE	DELIVERY MODE
09/17/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	**Application No.**	**Applicant(s)**	
	10/566,306	TRACY, DAVID H.	
	Examiner	**Art Unit**	
	FELIX E. SUAREZ	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Withdrawal of Final Rejection, Non Final Rejection on new ground(s)

1. The indicated Final Rejection is withdrawn and Non Final Rejection is made in view of new ground(s). Rejections based on new ground(s) follow.

The Examiner has thoroughly reviewed applicant arguments; and the Examiner considers that they are persuasive in view that; the instant application, although entering the US national phase on January 27, 2006, had a PCT filing date of August 2, 2004 and a US priority filing date of August 1, 2003. Thus, Kochergin et al. (US Patent No. 6,819,812) is not a 35 U.S.C. §102(b) reference.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-
(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-3, 6-27, 32, 34-44 and 46, are rejected under 35 U.S.C. 102(e) as being unpatentable over Kochergin et al. (U.S. Patent No. 6,549,687).

With respect to claim 1, Kochergin et al. (hereafter Kochergin) teaches a method for quantization of surface-binding optical resonance profiles comprising, in combination, the steps of:

obtaining at least one calibration (see col. 10, lines 64-67, control block 49 responds to the electrical detection signal from the photo-detector 48 in the example embodiment by calibrating a variable voltage or other tuning signal for the tunable Vertical Cavity, Surface Emitting Laser VCSEL) result from a calibration scan (see col. 10, lines 42-46, the tunable VCSEL 30, by continuously scanning its output spectrum) of at least one Region of Interest (see col. 11, lines 13-21, the Fabry-Perot cavity region that contains the active material);

generating, from at least one calibration result, a calibration profile for at least one scanned Region of Interest (see col. 9, lines 27-31; FIG. 4 exemplary transmission optical power profile of a sensor employing Surface Plasmon Resonance SPR; and see Kochergin; col. 14, lines 56-61, Calibration defines the relationship between a change in the stimulating parameter and a corresponding change in wavelength. The wavelength value is determined by monitoring the wavelength control signal and comparing it to the wavelength reference 43 or mirror 32 position feedback 35 (capacitive), as required);

obtaining at least one experimental result from an experimental scan of at least one Region of Interest (see col. 14 lines 38-42, as a result of the scan through the wavelength range, the optical signal at the input to the optical detector 48 as well as the electrical signal from the optical detector will appear as

indicated in illustration FIG. 3C or 3G for the reflection mode and FIG 3D or 3H for the transmission mode); and

determining at least one resonance parameter (see col. 16, lines 21-25, an example of a surface Plasmon resonance-based sensor transmission spectrum is given in FIG. 4. The valley in the curve, caused by a surface Plasmon, is shifted in wavelength) by fitting at least one experimental result to the calibration profile (see col.16 lines 39-45, another feature of Surface Plasmon Resonance sensors is that the resonance transmission valley can be located at any predetermined wave-length within the near infrared or infrared spectrum. Thus, tunable VCSELs 30 operated at 950-980nm, for example, will be equally as useful as VCSELs operating in the communications bands in the 1310 nm, and 1550nm ranges).

With respect to claim 2, Kochergin further teaches that, one resonance parameter is an angle shift (see col. 3, lines 60-67, the angle of minimum reflective intensity is the resonance angle).

With respect to claim 3, Kochergin further teaches that, one resonance parameter is a wavelength shift (see col. 16, lines 21-25, the valley in the curve, caused by a surface Plasmon, is shifted in wavelength).

With respect to claim 6, Kochergin further teaches, the step of computing

at least one calibration set statistic (see col. 7, lines 1-16, wavelength at minimum, maximum or slope; and see col. 16, lines 32-38, lasers and/or optical spectrometers will provide at least an order of magnitude increase in the system resolution through computational and statistical means).

With respect to claim 7, Kochergin further teaches, including the step of displaying at least one calibration set statistic (see col. 13, lines 53-56, signal waveforms illustrated in FIGS. 3A-3J), .

With respect to claim 8, Kochergin further teaches, said step of generating a calibration profile for at least one scanned Region of Interest comprises the steps of:

generating a raw calibration profile (see col. 16 line 65 to col. 17 line 5; and FIG. 5A, the scanned absorption edge); and

determining at least one derivative of said calibration profile from the raw calibration profile (see col. 17, lines 22-37, FIGS 5B and 5C are illustrative examples of improved, taking first derivative, as shown in FIG. 5B and second derivative, as shown in FIG. 5C).

With respect to claim 9, Kochergin further teaches, said step of generating a calibration profile for at least one scanned Region of Interest further comprises the step of smoothing said raw calibration profile (see col. 17, lines 45-47, the

spectra can be interpolated, smoothed or subjected to any other mathematical analysis).

With respect to claim 10, Kochergin further, said step of generating a calibration profile for at least one scanned Region of Interest further comprises the step of determining at least one property of said calibration profile from the raw calibration profile (see col. 17, lines 42-45, perform the determination of wavelength position utilizing the peak of the first derivative).

With respect to claim 11, Kochergin further teaches that, the properties determined are selected from the group consisting of Full Width at Half Maximum, nominal resonance angle, and maximum intensity (see col. 3 line 65 to col. 4 line 4, the angle of minimum reflective intensity is the resonance angle, maximum coupling, a half-width).

With respect to claim 12, Kochergin further teaches, said step of generating a calibration profile further comprises the step of sub-sampling the smoothed raw calibration profile (see col. 17, lines 42-47, the spectra can be interpolated, smoothed or subjected to any other mathematical analysis).

With respect to claim 13, Kochergin further teaches, said step of generating a calibration profile further comprises the step of extrapolating the

ends of the sub-sampled smoothed raw calibration profile (see col. 17, lines 42-47, the spectra can be interpolated, smoothed or subjected to any other mathematical analysis).

With respect to claim 14, Kochergin further teaches, said step of generating a calibration profile further comprises the step of performing a second smooth of the sub-sampled smoothed raw calibration profile (see col. 17, lines 22-37, FIGS 5B and 5C are illustrative examples of improved, taking first derivative, as shown in FIG. 5B and second derivative, as shown in FIG. 5C).

With respect to claim 16, Kochergin further teaches, said step of generating a calibration profile further comprises the steps of:

determining the quality of the calibration profile (see col. 15, lines 17-30, since communications art has advanced into the tens of GHz and slower scanning speeds can be tolerate in practical situations, greater wavelength resolution could be obtained); and

marking the calibration profile according to the quality determination (see col. 15, lines 17-30, further, since typical Bragg reflection peaks wavelength widths are on the order of hundreds of picometers).

With respect to claim 17, Kochergin further teaches including the step of performing a preliminary quality check on at least one calibration result (see col.

14 line 56 to col. 15 line 3, calibration defines the relationship between a change in the stimulating parameter and a corresponding change in a wavelength. The wavelength value is determined by monitoring the wavelength control signal and comparing it, to the wavelength reference; and see col. 15, lines 57-61, the number of wavelength reference points is determined by the accuracy and linearity of the laser tuning mechanism and the required accuracy of the physical parameter measurement).

With respect to claim 18, Kochergin further teaches including the step of flagging at least one calibration result in memory as valid or invalid according to the results of the preliminary quality check (see col. 14 line 64 to col. 15 line 3, many computation algorithms can perform the determination of the wavelength position of the minima or maxima).

With respect to claim 19, Kochergin further teaches, including the step of computing a derivative of at least one calibration profile (see col. 17, lines 22-37, FIGS 5B and 5C are illustrative examples of improved, taking first derivative, as shown in FIG. 5B and second derivative, as shown in FIG. 5C).

With respect to claim 20, Kochergin further teaches including the step of displaying at least one scan result to a user (see col. 13, lines 53-59, signal waveforms illustrated in FIGS. 3A-3J).

With respect to claim 21, Kochergin further, said step of determining at least one resonance parameter for said experimental scan of at least one Region of Interest comprises the steps of:

calculating an estimated resonance shift (see col. 16, lines 21-27, the absolute value of said shifted wavelength provides a very precise information about the concentration of, for example, a reagent in a solution);

calculating at least one interpolated profile from said estimated resonance shift and said calibration profile (see col. 15, lines 30-32, interpolation of the spectra data from the sensor array by a mathematically smooth, continuous function of time);

fitting said experimental scan, using said interpolated calibration profile (see col. 15, lines 30-32, interpolation of the spectra data from the sensor array by a mathematically smooth, continuous function of time);

obtaining fit coefficients from said step of fitting (see col. 15, lines 53-58, knowledge of the predetermined cycle rate, or waveform, of the voltage or other tuning signal, together with such reference wavelengths, provides the signal processing circuit with sufficient information to synchronize the beginning of each new tuning cycle with the laser wavelength);

calculating, from the fit coefficients (see col. 15, lines 48-61, grating or cell coefficients), a residual resonance shift from the resonance shift (see col. 15, lines 48-61, the number of wavelength reference points is determined by the

accuracy and linearity of the laser tuning mechanism and the required accuracy of the physical parameter measurement);

calculating an improved estimate of the resonance shift (see col. 16, lines 21-27, the absolute value of said shifted wavelength provides a very precise information about the concentration of, for example, a reagent in a solution); and

iterating until the value of the resonance shift converges to a predetermined convergence criterion (see col. 15, lines 42-45, tuning control or feedback).

With respect to claim 22, Kochergin further teaches said step of determining at least one resonance parameter for said experimental scan of at least one Region of Interest comprises the step of calculating fit residuals (see col. 12, lines 39-58, each Bragg grating sensor within sensor array 45 reflects a predetermined narrow wavelength band of light and passes the remaining wavelengths on toward the next sensor).

With respect to claim 23, Kochergin further teaches said step of determining at least one resonance parameter further includes the step of estimating the time of scan minimum (see col. 15, lines 6-13, at a frequency of only 1kHz each scan takes 1 millisecond).

With respect to claim 24, Kochergin further teaches said step of

determining at least one resonance parameter further includes the step of initially priming the experimental scan to within the limits of the calibration profile (see col. 15, lines 4-10, during each full tunable VCSEL wavelength scan, N intensity measurement points are taken. The number of N could be adequately large even if the tunable VCSEL could be operated at a maximum tuning speed of tens of kHz).

With respect to claim 25, Kochergin further teaches said step of determining at least one resonance parameter further includes the step of fitting to a sweet zone, comprising the steps of:

truncating the interpolated profile to the sweet zone (see col. 15, lines 25-37, this in turn will allow the interpolation of the spectral data from the sensor array by a mathematically smooth, continuous function of time. Many applicable mathematical techniques and their electronic implementations are known in the art); and

re-determining the resonance parameter utilizing the truncated interpolated profile (see col. 16, lines 21-27, the absolute value of said shifted wavelength provides a very precise information about the concentration of, for example, a reagent in a solution).

With respect to claim 26, Kochergin further teaches said step of determining at least one resonance parameter further includes the step of

performing initial data validity checks (see col. 15, lines 4-10, during each full tunable VCSEL wavelength scan, N intensity measurement points are taken. The number of N could be adequately large even if the tunable VCSEL could be operated at a maximum tuning speed of tens of kHz).

With respect to claim 27, Kochergin further teaches said step of performing initial data validity checks comprises the steps of:

checking profile availability; checking self-consistency of data; and checking scan indexing (see col. 17, lines 22-37, detecting precisely the spectral position of an absorption band with a very wide maximum, such as the long pass band of a semiconductor; In case of a pure semiconductor, the sensor will be self-calibrating).

With respect to claim 32, Kochergin further teaches that, 32. The method of claim 1, further including the step of performing a chip qualification check (see col. 17, lines 22-37, detecting precisely the spectral position of an absorption band with a very wide maximum, such as the long pass band of a semiconductor; In case of a pure semiconductor, the sensor will be self-calibrating since the wavelength dependence of the absorption edge is very well known).

With respect to claim 34, Kochergin teaches an apparatus for quantization of surface-binding optical resonance profiles comprising, in combination:

calibration module, said calibration module comprising:

calibration scan result fetcher (see col. 10 line 64 to col. 11 line 2, control block 49 responds to the electrical detection signal from the photo-detector 48 in the example embodiment by calibrating a variable voltage or other tuning signal for the tunable Vertical Cavity, Surface Emitting Laser VCSEL; and see col. 10, lines 42-45, the tunable VCSEL 30, by continuously scanning its output spectrum); and

calibration profile creation module (see col. 9, lines 27-31; FIG. 4 exemplary transmission optical power profile of a sensor employing Surface Plasmon Resonance SPR); and

fitting module, said fitting module comprising:

experimental scan result fetcher (see col. 15, lines 53-58, knowledge of the predetermined cycle rate, or waveform, of the voltage or other tuning signal, together with such reference wavelengths, provides the signal processing circuit with sufficient information to synchronize the beginning of each new tuning cycle with the laser wavelength);

calibration profile fetcher (see col. 9, lines 27-31; FIG. 4 exemplary transmission optical power profile of a sensor employing Surface Plasmon Resonance SPR); and

resonance shift determination module (see col. 9, lines 27-31; FIG. 4 exemplary transmission optical power profile of a sensor employing Surface Plasmon Resonance SPR).

With respect to claim 35, Kochergin further teaches said calibration profile creation module further includes a curve smoother (see col. 15, lines 53-60, Bragg gratings employing phase shifts, allows the interpolation of the spectral data from the sensor array by a mathematically smooth, continuous function of time).

With respect to claim 36, Kochergin further teaches said calibration profile creation module further includes a sub-sampler (see col. 15, lines 25-32, Bragg gratings employing phase shifts, allows the interpolation of the spectral data from the sensor array by a mathematically smooth, continuous function of time).

With respect to claim 37, Kochergin further teaches said calibration profile creation module further includes a curve smoother and a sub-sampler (see col. 15, lines 27-32, Bragg gratings employing phase shifts, allows the interpolation of the spectral data from the sensor array by a mathematically smooth, continuous function of time).

With respect to claim 38, Kochergin further teaches including a resonance parameter calculator (see col. 3, lines 33-40, SPR, Surface Plasmon Resonance-based sensors for biological and/or chemical monitoring).

With respect to claim 39, Kochergin further teaches that, the calculated resonance parameters are selected from the group consisting of estimated absolute resonance point, time of resonance minimum, diagnostic information, and quality information (see col. 4, lines 43-56, in a non-waveguide optical scheme with 5000 pixels, the SPR minimum is read by at least 2000 pixels).

With respect to claim 40, Kochergin further teaches including an instrument control and data acquisition module (see col. 1, lines 45-51, a Vertical Cavity, Surface Emitting Laser VCSEL with an integrated micro-electromechanical MEMS tuning).

With respect to claim 41, Kochergin further teaches including a test and support module (see col. 1, lines 45-51, a Vertical Cavity, Surface Emitting Laser VCSEL with an integrated micro-electromechanical MEMS tuning).

With respect to claim 42, Kochergin teaches a method for qualifying a surface Plasmon resonance chip comprising, in combination, the steps of:

obtaining a golden calibration profile for the type of chip to be qualified (see col. 10 line 64 to col. 11 line 2, control block 49 responds to the electrical detection signal from the photo-detector 48 in the example embodiment by calibrating a variable voltage or other tuning signal for the tunable Vertical Cavity, Surface Emitting Laser VCSEL; and see col. 5, lines 9-35, an illustrative example

of a characteristic absorber/reflector material is a semiconductor);

obtaining at least one calibration result from a calibration scan of at least one Region of Interest of a chip to be tested (see col. 9, lines 27-31; FIG. 4 exemplary transmission optical power profile of a sensor employing Surface Plasmon Resonance SPR);

comparing said at least one calibration result to said golden calibration profile to obtain at least one comparison result (see col. 16, lines 21-25, the valley in the curve, caused by a surface Plasmon, is shifted in wavelength); and

determining whether said chip is suitable for use by applying selection criteria to said at least one comparison result (see col. 7, lines 1-16, wavelength at minimum, maximum or slope; and see col. 16, lines 36-38, lasers and/or optical spectrometers will provide at least an order of magnitude increase in the system resolution through computational and statistical means).

With respect to claim 43, Kochergin further teaches including the step of displaying chip qualification results to the user (see col. 13, lines 53-59, signal waveforms illustrated in FIGS. 3A-3J).

With respect to claim 44, Kochergin further teaches that, the step of determining whether the chip is suitable includes the step of incrementing a "bad ROI" count (see col. 11, lines 13-22, the Fabry-Perot cavity region that contains the active material, alternately, as a reflective or partially reflective single layer,

such as aluminum).

With respect to claim 46, Kochergin further teaches that, the step of comparing the calibration includes the step of initializing a fit module with a chip qualification parameter set (see col. 3 line 56 to col. 4 line 4, the angle of minimum reflective intensity is the resonance angle).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 4, 5, 28-31, 33 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kochergin et al. (U.S. Patent No. 6,549,687) in view of Thornton (U.S. Patent No. 7,283,242).

With respect to claim 4, Kochergin et al. (hereafter Kochergin) teaches al the features of the claimed invention, except that Kochergin does not teach,

the step of storing at least one calibration profile in memory.

But Thornton teaches in an optical spectroscopy apparatus that, once a signal is digitized, it is processed within a digital signal processor (DPS) which performs the function of multi-tone phase sensitive detection for the several

tones simultaneously present on the photo-detector sensor; Thornton also teaches that at the DPS, the amplitudes as well as phase differences of the multi-tone frequency signals are compared with known spectral data, stored in the memory (see Thornton; col. 22, lines 24-39).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kochergin to include the digital signal processor (DSP) as taught by Thornton, because the DSP of Thornton allows to compare data from the photo-detector with known spectral data, stored in the memory, as desired.

With respect to claim 5, Kochergin teaches al the features of the claimed invention, except that Kochergin does not teach,

the step of storing at least one resonance parameter in memory.

But Thornton teaches in an optical spectroscopy apparatus that, once a signal is digitized, it is processed within a digital signal processor (DPS) which performs the function of multi-tone phase sensitive detection for the several tones simultaneously present on the photo-detector sensor; Thornton also teaches that at the DPS, the amplitudes as well as phase differences of the multi-tone frequency signals are compared with known spectral data, stored in the memory (see Thornton; col. 22, lines 24-39).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kochergin to include a digital signal

processor (DSP) as taught by Thornton, because the DSP of Thornton allows to compare data from the photo-detector with known spectral data, stored in the memory, as desired.

With respect to claim 28-31, Kochergin teaches al the features of the claimed invention, except that Kochergin does not teach,

the step of fitting employs a least squares fit;

the step of reporting errors in an error log;

the step of reporting errors utilizes a local error log; nor

the step of reporting errors employs remote error reporting.

But Thornton teaches two statistical analytical models for quantitative analysis, the net analyte signal at the solid line curve and the partial least squares. These two models approaches illustrative what is called spectral residuals (see Thornton; col. 19, lines 33-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kochergin to include a statistical analytical models for quantitative analysis as taught by Thornton, because the statistical analytical models for quantitative analysis of Thornton allows to the partial least squares model to approaches illustrative what is called spectral residuals, as desired.

With respect to claim 33, Kochergin teaches a method for quantization of

surface-binding optical resonance profiles comprising, in combination, the steps of:

obtaining at least one calibration (see col. 10 line 64 to col. 11 line 2, control block 49 responds to the electrical detection signal from the photo-detector 48 in the example embodiment by calibrating a variable voltage or other tuning signal for the tunable Vertical Cavity, Surface Emitting Laser VCSEL) result from a calibration scan (see col. 10, lines 42-46, the tunable VCSEL 30, by continuously scanning its output spectrum) of at least one Region of Interest (see col. 11, lines 13-22, the Fabry-Perot cavity region that contains the active material) result from a calibration scan of at least one Region of Interest (see col. 9, lines 27-31; FIG. 4 exemplary transmission optical power profile of a sensor employing Surface Plasmon Resonance SPR; and see Kochergin; col. 14, lines 56-61, Calibration defines the relationship between a change in the stimulating parameter and a corresponding change in wavelength. The wavelength value is determined by monitoring the wavelength control signal and comparing it to the wavelength reference 43 or mirror 32 position feedback 35 (capacitive), as required);

generating, from at least one calibration result, a calibration profile for at least one scanned Region of Interest (see col. 9, lines 27-31; FIG. 4 exemplary transmission optical power profile of a sensor employing Surface Plasmon Resonance SPR), comprising the steps of:

generating a raw calibration profile (see col. 16, line 65 to col. 17

line 5; and FIG. 5A, the scanned absorption edge);

smoothing said raw calibration profile (see col. 17, lines 41-47, the spectra can be interpolated, smoothed or subjected to any other mathematical analysis);

sub-sampling the smoothed raw calibration profile (see col. 17, lines 41-47, the spectra can be interpolated, smoothed or subjected to any other mathematical analysis); and

determining properties of said calibration profile from the smoothed raw calibration profile (see col. 17, lines 41-47, perform the determination of wavelength position utilizing the peak of the first derivative);

Kochergin does not teach;

storing at least one calibration profile in memory.

But Thornton teaches in an optical spectroscopy apparatus that, once a signal is digitized, it is processed within a digital signal processor (DPS) which performs the function of multi-tone phase sensitive detection for the several tones simultaneously present on the photo-detector sensor; Thornton also teaches that at the DPS, the amplitudes as well as phase differences of the multi-tone frequency signals are compared with known spectral data, stored in the memory (see Thornton; col. 22, lines 24-39).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kochergin to include a digital signal processor (DSP) as taught by Thornton, because the DSP of Thornton allows to

compare data from the photo-detector with known spectral data, stored in the memory, as desired.

Kochergin further teaches;

computing a derivative of at least one calibration profile (see col. 17, lines 22-38, FIGS 5B and 5C are illustrative examples of improved, taking first derivative, as shown in FIG. 5B and second derivative, as shown in FIG. 5C);

obtaining at least one experimental result from an experimental scan of at least one Region of Interest (see col. 16, lines 21-27, the absolute value of said shifted wavelength provides a very precise information about the concentration of, for example, a reagent in a solution);

determining a resonance shift of at least one experimental result relative to at least one calibration profile, comprising the steps of:

calculating an estimated resonance shift (see col. 16, lines 21-27, the absolute value of said shifted wavelength provides a very precise information about the concentration of, for example, a reagent in a solution);

calculating at least one interpolated profile from said estimated resonance shift and said calibration profile (see col. 15, lines 30-32, interpolation of the spectra data from the sensor array by a mathematically smooth, continuous function of time);

fitting said experimental scan, using said interpolated calibration

profile (see col. 15, lines 53-58, knowledge of the predetermined cycle rate, or waveform, of the voltage or other tuning signal, together with such reference wavelengths, provides the signal processing circuit with sufficient information to synchronize the beginning of each new tuning cycle with the laser wavelength);

obtaining fit coefficients from said step of fitting (see col. 15, lines 52-58, knowledge of the predetermined cycle rate, or waveform, of the voltage or other tuning signal, together with such reference wavelengths, provides the signal processing circuit with sufficient information to synchronize the beginning of each new tuning cycle with the laser wavelength);

calculating, from the fit coefficients (see col. 15, lines 48-53, grating or cell coefficients), a residual resonance shift from the resonance shift (see col. 15, lines 58-61, the number of wavelength reference points is determined by the accuracy and linearity of the laser tuning mechanism and the required accuracy of the physical parameter measurement);

calculating an improved estimate of the resonance shift (see col. 16, lines 21-27, the absolute value of said shifted wavelength provides a very precise information about the concentration of, for example, a reagent in a solution);

calculating fit residuals (see col. 15, lines 58-62, the number of wavelength reference points is determined by the accuracy and linearity of

the laser tuning mechanism and the required accuracy of the physical parameter measurement);

iterating until the estimated value of the resonance shift converges to a predetermined convergence criterion (see col. 15, lines 42-53, tuning control or feedback); and

estimating the time of scan minimum (see col. 15, lines 4-13, at a frequency of only 1kHz each scan takes 1 millisecond); and

displaying at least one scan result to a user (see col. 13, lines 53-59, signal waveforms illustrated in FIGS. 3A-3J).

With respect to claim 45, Kochergin teaches al the features of the claimed invention, except that Kochergin does not teach,

the step of storing a "bad ROI' number for display.

But Thornton teaches in an optical spectroscopy apparatus that, once a signal is digitized, it is processed within a digital signal processor (DPS) which performs the function of multi-tone phase sensitive detection for the several tones simultaneously present on the photo-detector sensor; Thornton also teaches that at the DPS, the amplitudes as well as phase differences of the multi-tone frequency signals are compared with known spectral data, stored in the memory (see Thornton; col. 22, lines 24-39).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kochergin to include a digital signal

processor (DSP) as taught by Thornton, because the DSP of Thornton allows to compare data from the photo-detector with known spectral data, stored in the memory, as desired.

Response to Arguments

4. Applicant's arguments filled have been fully considered but they are moot in view of the new ground(s) of rejection set forth hereinbefore.

With respect to the prior art to Kochergin et al. (US Patent No. 6,819,812) is not a 35 U.S.C. §102(b), the Examiner is making a non final rejection with the parent case to Kochergin et al. (US Patent No. 6,549,687), issued on April 15, 2003 and filed on October 26, 2001.

With respect to Applicant's argument that;

"Because Kochergin et al. (US 6,819,812) has a filing date of April 14, 2003, it could potentially qualify as a 35 U.S.C. § 102(e) reference. In anticipation that the Examiner would reject the claims based on 35 U.S.C. § 102(e), Applicant encloses concurrently herewith a declaration under 37 C.F.R. § 1.131 demonstrating that Applicants were in possession of the instant invention prior to the filing date of the cited patent, namely April 14, 2003" (see Applicant's REMARKS/ARGUMENTS, page 2 of 4, last paragraph).

The Examiner disagrees.

The declaration under 37 C.F.R. § 1.131, is inappropriate over the parent Patent to Kochergin et al. (US Patent No. 6,549,687).

The Examiner also notice that; the attachment to the declaration, fails to show where the claims are supported by referred document; and at the same time the Examiner notice that the date of the attachment has been deleted, but the Examiner respectfully believes that the information is true, as it is stated, by the inventor of this instant application David H. Tracy.

Conclusion

Prior Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Johnston et al. [U.S. Patent No. 6,825,922] describes a position sensitive detector.

Coates et al. [U.S. Patent No. 6,707,043] describes an on site analyzer.

Tracy et al. [U.S. Patent No. 6,029,115] describes an analyzer spectrometric data.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Felix Suarez, whose telephone number is (571) 272-2223. The examiner can normally be reached on weekdays from 8:30 a.m. to 5:00 p.m.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571) 272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular communications and for After Final communications.
September 11, 2009

/Felix E Suarez/
Examiner, Art Unit 2857

/Eliseo Ramos-Feliciano/
Supervisory Patent Examiner, Art Unit 2857